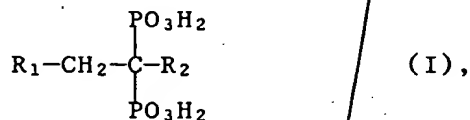


What is claimed is:

1. A substituted alkanediphosphonic acid, in particular a heteroaryl-  
alkanediphosphonic acid of formula



wherein  $\text{R}_1$  is a 5-membered heteroaryl radical which contains, as hetero atoms, 2 to 4 N-atoms or 1 or 2 N-atoms as well as 1 O- or S-atom, and which is unsubstituted or C-substituted by lower alkyl, phenyl or phenyl which is substituted by lower alkyl, lower alkoxy and/or halogen, or by lower alkoxy, hydroxy, di-lower alkylamino, lower alkylthio and/or halogen, and/or is N-substituted at a N-atom which is capable of substitution by lower alkyl, lower alkoxy and/or halogen, and  $\text{R}_2$  is hydrogen, hydroxy, amino, lower alkylthio or halogen, or a salt thereof.

2. A compound as claimed in claim 1, of formula I, wherein  $\text{R}_1$  is an imidazolyl, pyrazolyl, 2H-1,2,3-triazolyl, 1H-1,2,4-triazolyl or 4H-1,2,4-triazolyl, tetrazolyl, oxazolyl, isoxazolyl, oxadiazolyl, thiazolyl or thiadiazolyl radical which is unsubstituted or C-substituted by one or two members selected from lower alkyl, lower alkoxy, phenyl or phenyl which is in turn substituted by one or two members selected from lower alkyl, lower alkoxy and/or halogen, hydroxy, di-lower alkylamino, lower alkylthio and/or halogen, and/or is N-substituted at a N-atom which is capable of substitution by lower alkyl or phenyl-lower alkyl which is unsubstituted or substituted by one or two members selected from lower alkyl, lower alkoxy and/or halogen; and  $\text{R}_2$  is hydrogen, hydroxy, amino, lower alkylthio or halogen, or a salt thereof.

3. A compound as claimed in claim 1, of formula I, wherein  $\text{R}_1$  is an imidazolyl, 4H-1,2,4-triazolyl or thiazolyl radical which is unsubstituted or C-substituted by one or two members selected from  $\text{C}_1$ - $\text{C}_4$ alkyl,  $\text{C}_1$ - $\text{C}_4$ alkoxy, phenyl, hydroxy, di- $\text{C}_1$ - $\text{C}_4$ alkylamino,  $\text{C}_1$ - $\text{C}_4$ alkylthio and/or

halogen having an atomic number up to 35 inclusive, and/or is N-substituted by C<sub>1</sub>-C<sub>4</sub>alkyl or phenyl-C<sub>1</sub>-C<sub>4</sub>alkyl, and R<sub>2</sub> is hydroxy, hydrogen or amino, or a salt thereof.

4. A compound as claimed in claim 1, of formula I, wherein R<sub>1</sub> denotes an imidazole-1-yl radical which is unsubstituted or C-substituted by phenyl or C- or N-substituted by C<sub>1</sub>-C<sub>4</sub>alkyl, and R<sub>2</sub> is hydrogen, hydroxy, amino, lower alkylthio or halogen, or a salt thereof.

5. A compound as claimed in claim 1, of formula I, wherein R<sub>1</sub> denotes imidazol-1-yl or 2-, 4- or 5-C<sub>1</sub>-C<sub>4</sub>-alkylimidazol-1-yl, and R<sub>2</sub> is hydrogen, hydroxy, amino, lower alkylthio or halogen, or a salt thereof.

6. A compound as claimed in claim 1, of formula I, wherein R<sub>1</sub> is an imidazol-2-yl or imidazol-4-yl radical which is unsubstituted or C-substituted by phenyl or C- or N-substituted by C<sub>1</sub>-C<sub>4</sub>alkyl, or is an unsubstituted thiazolyl radical or a 1H-1,2,4-triazolyl radical which is unsubstituted or N-substituted by C<sub>1</sub>-C<sub>4</sub>alkyl, and R<sub>2</sub> is hydroxy or hydrogen, or a salt thereof.

7. A compound as claimed in claim 1, of formula I, wherein R<sub>1</sub> is an imidazol-1-yl, pyrazol-1-yl, 1H-1,2,4-triazol-1-yl, 4H-1,2,4-triazol-4-yl or tetrazol-4-yl radical which is unsubstituted or C-substituted by phenyl or C<sub>1</sub>-C<sub>4</sub>alkyl, and R<sub>2</sub> is hydroxy or hydrogen, or a salt thereof.

8. A compound of formula I, wherein R<sub>1</sub> is an unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-substituted imidazole radical and R<sub>2</sub> is hydroxy or halogen, or a salt thereof.

9. A compound claimed in claim 1 being 2-(imidazol-4-yl)-1-hydroxyethane-1,1-diphosphonic acid or a salt thereof.

10. A compound claimed in claim 1 being 2-[4(5)-methylimidazol-5(4)-yl]-1-hydroxyethane-1,1-diphosphonic acid or a salt thereof.

11. A compound claimed in claim 1 being 2-(1-methylimidazol-4-yl)-1-hydroxyethane-1,1-diphosphonic acid or a salt thereof.

12. A compound claimed in claim 1 being 2-(imidazol-1-yl)-1-hydroxyethane-1,1-diphosphonic acid or a salt thereof.

13. A compound claimed in claim 1 being 2-(imidazol-1-yl)ethane-1,1-diphosphonic acid or a salt thereof.

14. A compound claimed in claim 1 being 2-(1H-1,2,4-triazol-1-yl)-1-hydroxyethane-1,1-diphosphonic acid or a salt thereof.

15. A compound claimed in claim 1 being 2-(imidazol-4-yl)ethane-1,1-diphosphonic acid or a salt thereof.

16. A compound claimed in claim 1 being 2-(4,5-dimethylimidazol-1-yl)-1-hydroxyethane-1,1-diphosphonic acid or a salt thereof.

17. A compound claimed in claim 1 being 2-(2-methylimidazol-1-yl)-1-hydroxyethane-1,1-diphosphonic acid or a salt thereof.

18. A compound claimed in claim 1 being 2-(4H-1,2,4-triazol-2-yl)-1-hydroxyethane-1,1-diphosphonic acid or a salt thereof.

19. A pharmaceutical composition containing a compound claimed in claim 1, together with conventional pharmaceutical excipients.

20. A method of treating diseases associated with impaired calcium metabolism, which comprises administering a compound claimed in claim 1.

add  
a

USP  
Ant

Host  
Ant